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SafeEngine - Blended Learning through Innovative Tools for Sustainable and Safety Engineering and Social Inclusion

Erasmus+ Programme Key Action 2
Strategic Partnerships

O2 Training Methodology for Online Learning

Good practices for the development of online courses

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Revised

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Learning design, co-design, syllabus, course mapping, Brainstorming, Flash debate, Crossword puzzle, Fish bowl, Icebreakers, Scavenger hunt, Structured debate, Scaffolding.



1 Introduction

1.1 Project Overview

SafeEngine is a project of cooperation for innovation and the exchange of good practices, which aims to improve the knowledge of engineering students in the sector of health, safety, and social inclusion in the workplace.

To reach this aim, within the project were developed, tested, and implemented 4 stackable course modules, specifically addressed to Master Bachelor Science (MS) students of engineering classes, related to the following topics:

- i) occupational health and safety
- ii) environmental risk assessment
- iii) safety in process industries, and
- iv) social inclusion of people with disabilities in the workplace.

The specific objectives (SOP) of SafeEngine are:

- SOP1. Development and implementation of 4 stackable e-learning course modules and related practical works with open online access.
- SOP2. Development of best practices, common standards, and guidelines for designing and creating e-learning courses.
- SOP3. Testing the innovative practices developed in the framework of SafeEngine project through innovative ICT technologies and mutual learning.
- SOP4. Dissemination and Exploitation of project results.

1.2 Objective of the report

Digital learning is a completely new form of learning, in which the teacher is no longer a speaker in front of the students, but part of the learning process. The entire learning experience must be built through the use of new technologies and also through the connection with and between students, with experts and professors following different pedagogical approaches that can reduce the teacher-student gap. This is no longer a choice in education, because in the next future digital and non-digital learning, online and offline, will work more and more closely together, providing flexible and inclusive student-centred delivery in line with the changing educational needs of the digital generation and a growing audience of lifelong learners.

Consequently, on the one hand the higher education sector needs to find ways of increasing investment in teacher training because on-campus face-to-face teaching methods cannot be transitioned directly and/or easily to the online environment. On the other hand, teachers need to become familiar not only with



the affordances of the various technologies offered to them by their institution and e-learning system, but also need to plan courses and lessons around student-centred learning design, to offer an effective and engaging learning experience. This report aims to support teachers in the design of an online course, providing a methodology and useful tips to find a good balance between different approaches, know-how and expectations in the learning design. The purpose of the report is two-fold:

- a) To present an approach to learning design and learning innovation, that is not simply about the widespread use of digital tools. What makes digital learning possible are the connections through networks (of knowledge and not only virtual) that bring new opportunities for learning.
- b) To provide concrete advice on how to approach the preparation of an online course, as a guide for teachers in the MOOC preparation process

2 An approach to Learning Design

2.1 Planning an online course

Creating an online course does not simply mean preparing lessons to upload on a repository for free consultation by students.

Learning Design refers to the structuring of the learning environment and interactions so that students can learn. It means considering the needs of the students, their prerequisites and the expectations and methods of study.

Students and their needs are changing, they are becoming more diverse and complex. Besides the disciplinary-specific knowledge that students require to become who they want to be in the world, more tacit knowledge, and transferable skills such as creativity, critical thinking, problem solving, teamwork and emotional intelligence are now also recognized as enablers for successful lives and careers.

As a consequence, the concept of design in learning and teaching is critical to the creation of the learning experience, and iterating learning and teaching processes is important to ensure continuous improvements.

Planning a course means thinking of all the aspects of teaching and learning, including student interactions with content, with other students and the instructor, to ensure alignment between learning objectives, assessment, and activities.



Design is also about the learning environment, clarity, and ease of use of the technologies chosen. It also concerns the methodologies, the course materials, the quantity and richness of contents, and the interactions to support the student.

The design of an online course requires attention not only to the students but also to the tools and methodologies we use. This is why learning design has become an emerging issue in recent years (Dick, W. & Carey, L.M. 1978, Conole, G. 2013, Biggs, J. 1999). As the learning environment changes and the needs of students change too, learning strategies change in the same way. This means rethinking, strategically, what constitutes effective practice in the course design, what the role of the teacher designer is, and, in general, how best to teach, or facilitate learning, for students who use more and more digital technologies.

There is no longer a choice between two alternatives - online or offline, digital, or non-digital. These two elements come together in various blended or hybrid forms to enrich the learning and teaching experience.

Online and Off-line, as well as Technology and Pedagogy can work together to enhance the teaching and learning experience and make it the driver, the engine of a sustainable transformation in education.

The pedagogy behind a course defines how it will guide its learners to their goals. Many different pedagogic approaches can be used in the creation of a course (Laurillard, D. 2012, Beetham, H., & Sharpe, R. 2013). The project can use different pedagogical models, as preferred by the individual partners.

Evaluation of user behavior and interaction within these different courses will allow the project to improve the platforms as well as the advice given to future courses online.

2.2 Starting from design

Designing a course means first of all focusing on the learning experience and not simply on the learning outcomes. So not only looking at the achievement of the final result but at the success of the entire pathway, which is based on the development of transversal competencies - critical thinking, communication, collaboration, creativity - all elements that contribute to enriching the learning experience. The design of the teaching experience is not a top-down process, which comes from experts who "educate" the teacher but it is a process of sharing experiences and knowledge between teachers, students and experts. Knowing these actors, and not just the tools and methodologies, their needs, and ambitions, is the starting point of learning design.



Researchers (Jimerson S.R., Campos E. and Greif J.L., 2003), identify three primary components of learner engagement for in-person and online settings:

- behavioral,
- cognitive and
- emotional.

In other words, we know that learners are engaged if they exhibit behaviors, thinking processes or emotions that indicate they are connecting with course materials, with the teacher and with each other.

Nevertheless, building strong relationships online is difficult. In the coming pages we'll identify useful tips to keep alive the relationship with the students, but the starting point is to consider the needs of our students in the design of a course.

The design framework of a course needs to design learning experiences that allow the student to achieve the desired learning outcome in a human-centered and goal-oriented way. This design has 6 basic elements to consider.

Fig.1: the basic elements of the design in teaching online



The first element concerns **learners' needs and problems**. This means starting from an analysis of user needs, define the characteristics of the target audience (age occupation, motivation, ambition). Identifying the students' prior knowledge and expectations is fundamental in the structuring and success of the course.



This process helps clarify the objectives, which should be classified within two macro categories: objectives related to the expected learning outcomes, and objectives related to the learning experience as a whole. The objectives underlying the design of a course should, therefore, on the one hand allow students to have a deeper understanding of the content, and, at the same time, improve those transversal competences previously discussed (collaboration, creativity, communication, critical thinking), and on the other encourage the improvement of study skills and the whole learning process. The fact that attending the class is stimulating, motivating, fun and involving is an important goal of learning design.

The second and third elements require a **focus on the learning context, on available resources and tools**. Consequently, not only a focus on the entire course of study that the student will follow, but also on the resources available in the student and the teacher's environment, which in one way or another influence the learning experience. Consider, for example, the availability of a user-friendly platform or a staff of experts to support teachers, or a difficult-to-consult repository. These are all elements that can facilitate or make the study experience complex and cumbersome.

The solid background of knowledge from the previous phases means we can move on to reflection on the type of course to produce. The fourth element of the design is **brainstorming**, looking for alternative ways to view the problem and identify innovative solutions for the course to develop.

With the fifth element, you start to ideate, to **co-design** involving teachers, professionals, technicians, and students in the design: consider their needs, their opinions and expectations.

Then, at the end, you can **model your idea** and solutions, start working on a first lesson, to test yourself and your product. This is a sort of experimental phase, where you can investigate the ideas you've generated, and find a balance between ideas, execution, and the student experience, and test the match between learning activities and outcomes in this first lesson.

The design of the teaching experience is not a top down process, which comes from experts who "educate" the teacher but it is a process of sharing experiences and knowledge between teachers, students and experts. Some workgroups, at this stage, prefer to work on a "fake" lesson e.g. helping a monster learn how to make a cup of tea, to ensure that the various stages of the design process that contribute to the model are clear to all the participants in the group.

Once your ideas are clear, you can start designing your **syllabus**.



The syllabus is not just an instrument for planning but an instrument to think of your expected outcomes, allowing you to build the whole learning experience. The word syllabus originates from the Greek. Basically, it means a concise statement or table of the headings of a discourse, the subjects of a series of lectures. In the form that many of us will have been familiar with, it is connected with courses leading to examinations – i.e. teachers talk of the syllabus associated with, say, the "Safety Industry" exam. What we can see in such documents is a series of headings, with some additional notes, which set out the areas that may be examined.

Those who compile a syllabus tend to follow the traditional textbook approach of an "order of contents", or a pattern prescribed by a "logical" approach to the subject. Thus, it's an approach concerned with content to be transmitted.

The syllabus has therefore always been recognized as that body of theoretical knowledge that Aristotle mentions, made up of notions. But for the Aristotle the knowledge is not only theoretical, there is also a *productive* knowledge, which determines the potentiality of learning, determining models that come close to practical deliberation; and there is also a *practical* knowledge, the knowledge of a practical-moral type that is capable of directing action to its success. Overall, the syllabus should allow space for the development of process and practice models, whereby students are given the opportunity to apply their knowledge in practical situations thus enabling them to direct their actions

Here the focus should be on the syllabus as a process by which knowledge is not transmitted but learned by students by the most effective methods.

A good practice is to think not just to the overall goals and description of the course, but focus on the individual elements of the course, on the lessons and on the teaching units. So that learning outcomes, expectations can be more precise and concrete.

The decisions made at the design stage will affect how the course will be developed. We have seen that at the beginning of the design we mentioned the characteristics of the target audience (age, skills, occupation, level of motivation, etc.), the learning context and resources, types of knowledge that the course must provide (theoretical knowledge or practical skills) and on the infrastructure in which the training is carried out. After that, depending on the format chosen, the implementation phase will require preparation of the learning environment, preparation of contents and activities and preparation of the teachers. We will deal with these aspects later, but here it is worth remembering that the design phase must never lose sight of the relationship with the student, who remains the fulcrum of the whole learning design process.

In order to maintain a close relationship with the students not only in the design phase, but also in the development and use of the course, it is important to keep



alive the relationship with the students by showing oneself present and available for dialogue. In a face-to-face setting, as in lectures, the connections arise informally through being physically present in the same place, it is the presence itself that guarantees the exchange and relationship. Differently in an online environment, opportunities for social connections need to be explicitly designed into the learning materials, for example with collaborative activities, discussion forums and blogs, and feedback is a key element to strengthen proximity.

Providing feedback to students, being present in a forum, or asking stimulating questions to students as in online debates, can help recover the "spirit of the class" and regain an atmosphere of closeness to the teacher, and it is also a good way to monitor learning. The monitoring allows us to investigate if the improvement of the intended learning outcomes and of the learning experience as a whole has been reached or not. And thanks to the feedbacks obtained from the monitoring phase we have the possibilities to re-adjust, re design, re-develop the learning experience itself.

2.3 The main elements of the learning design

To better design the learning experience, we cannot avoid identifying the decisive elements of the design: actors, contents, teaching and learning styles.

In the design phase it's necessary to defined the map of the **actors** who are involved in the learning process for various reasons. These are not only the students and the teachers but also the external experts that can collaborate in the course, the tutors, the professionals who support the teacher in the course development, and all the people that can be involved in the course preparation. We should begin to get to know them and then plan our experience considering their contribution. It is therefore useful to briefly describe these actors in terms of goals, expectations, constraints, needs, motivating and demotivating factors. Briefly describing the actors allows to highlight the elements on which to leverage within the didactic project.

First of all, we will focus on *goals and expectations* for the actors involved; these can be personal, practical, institutional or professional. For example, as far as *students* are concerned, we could identify specific skills development goals linked to future job opportunities, or characteristics linked to the level of knowledge and previous experience of the students.

While for the *teachers* we can identify the development of goals of their own research area, the cultural background of the teachers in terms of knowledge and



specific experience, but also the personal attitudes of the teachers, with regard to the teaching experience and processes of teaching and learning.

We will also have to consider the various *constraints and needs* of the users involved. For example, constraints in terms of time, or constraints in instrumental terms. These constraints must be considered for both students and teachers.

Finally, one last aspect to take into high consideration is the *motivational aspect*. We know that, for students, the motivational aspect greatly influences learning. But also, with regard to teachers, the motivational aspect is very important. A teacher who is highly involved in the learning-teaching experience and has a high motivation, will go beyond the traditional transmission of concepts, contents, skills. S/he will also convey interest and passion for the subject.

The other relevant aspect to consider in the design of our course is the **content**, meaning how to structure it, how to make it interesting to the students. It is important to identify how learners will most effectively engage with learning contents, materials, and tasks. In order to do this, we need to think carefully how to structure these learning contents. A very common mistake is the tendency to start designing the course from the index, and then go and think about the expected learning outcomes and the evaluation strategy. But if we think about when we write a book, the index is built as the contents take shape and we have a clear vision of it only at the end of the path. In the same way, when we design a course, we must start from the expected learning outcomes and from the reasoning on the evaluation strategies, and only then go on to think about the macro and micro contents. At a macro level we should consider the narrative structure of the content, which influences the reception and interpretation of the content itself. At a micro level we need to focus on the type of content (theoretical notions, case studies, exercises, etc.), the format (texts, videos, interactive exercises, etc.) and the resources (where the resources come from, OER).

The **narrative structure** activates patterns and sets up an affectively charged structure to which students will instinctively respond and with which they will interact.

Many studies indicate that the narrative form is pervasive; stories are the method by which people impose order and reason upon the world (Fisher, W, 1985). Good stories are remembered longer by students than lessons that lack them (Rex, Murnen, Hobbs & McEache 2002, 787). Framing events in a story allows individuals to interpret their environment, to better account for their lives, and importantly it provides a framework for making decisions about actions and their likely outcomes. Laurillard et al. (2000) consider how narrative can be used to



provide a coherent structure to multi-media materials that promotes learning and reflection.

We can have a deductive narrative structure that goes from the abstract concept to the practical application, which is the opposite of an inductive narrative structure, which instead goes from the practical application to arrive at the abstract concept. We can also have a temporal narrative structure which, on the other hand, develops a process, a fact, over time, or a thematic narrative structure which, on the other hand, focuses on a specific theme by analyzing it in its geographical context or in the different time dimension. Another narrative structure is that of questions and problems, which focuses on specific questions or problems, analyzes the various solutions, and then goes on to arrive at a systemic solution, that considers all the solutions identified.

So, when designing the content, the choices are multiple in terms of type and narrative structures. These choices, however, have to be related to further choices that will be made in terms of content format and type of resources to be used.

Regarding **the types of content**, these can be based on theoretical notions, on processes and methods, on case studies, exercises, examples, feedback and evaluations, instructions for carrying out activities, and so on. When designing a course, after having listed all the possibilities, it is important to stop and select the right content.

This content can also have different **formats**, the choice depends on the way in which we intend to convey the message, and the strategy which, in our opinion, is the most effective. Sometimes it is necessary to show activities or simply the face of the teacher, and therefore video is the most appropriate format, other times the text gives the student the time necessary to dwell on a concept. At other times, it is important to provide interactive elements such as hyperbolic trees, animated mindmaps, knowledge graphs, simulations, tag clouds, infographics, heat maps. The possibilities are endless and digital technologies provide new stimuli and ideas every day to enrich teaching strategies.

Another aspect to consider is the **teaching and learning style**. Reflecting on the teaching and learning style means not only measuring your own resources and abilities, but also understanding that students have different styles of learning, and teachers should design activities that address their diverse modes of learning to provide significant experience for each class participant. We could have passive types of learner (who basically use three channels of perception: reading, listening and seeing) or active types of learner (who use speaking, chatting,



doing). It's essential to guarantee the presence of passive and active elements to make both types of learner feel part of the learning experience.

3 Tips and good practices in the design and delivery online courses

3.1 The Federica Web Learning approach

The Web Learning platform of the University of Naples Federico II, Federica.eu has an outstanding experience in online learning and teaching. Its courses have a modular and flexible architecture, developed over fourteen years of research, innovation, and comparison with the most advanced international experiences. The design framework that we present here aims to design learning experiences that allow the student to achieve the desired learning outcome in a human-centered and goal-oriented way.

Starting from the basics of the learning design described above, the narrative path is developed through the definition of storyboarding, which remains an important tool for sharing the structure and the various actors in the development process (teacher, graphic designer, video makers, learning specialist ...). In this way, a shared scenario is defined by identifying the content structure based on the student journey and his/her learning experience. At this stage it is important that the vision is shared by all the players involved in the development of the content in order to ensure an effective learning experience for the end user.

Based on numerous analyzes made over the years, Federica adopts mainly short video formats (6-8 minutes) for the courses to avoid loss of student attention and facilitate the use of the contents. The design of the video is part of the process of defining the course structure. The planning for educational objectives makes each lesson a learning object, which allows the student to reach the desired degree of competence on the single topic. This therefore makes the content of each lesson modular and usable in its own right.

A fundamental element is the production of assessments, exercises / tests offered to the student to self-evaluate their understanding of the lessons. Basically, for each lesson, there are eight / ten true / false or multiple-choice questions but, based on the discipline addressed or the choice of the teacher, it is possible to activate additional methods such as, for example, Drag & Drop, open answers, serious games, forum activities or project work.



In the design phase, pre-assessments are defined, prior to the delivery phase, and final assessments and KPIs (such as percentage of completion, average score, pass / fail rate) to assess students' engagement and interest in the course.

The standards set for the preparation of an online course are briefly presented here.

Each course is divided into lessons (5/10)

Each lesson consists of two components:

- **Textual slides** (5-10 per lesson)
- **Video lectures** (1-3 per lesson).

To facilitate the use of the courses and their possible updating, **each lesson is divided into units (2-3).**

Each unit is composed of a video (6/8 minutes) and of textual contents organized in 10-12 slides

Videos can be made in different formats:

- natural conditions (offices, studies, library etc);
- chromakey insert, which allows to add additional graphic elements during video post-production;
- Talking Head: the professor in the foreground or half-length presents the topics in a discursive way, enriched by keywords and supporting images;
- Picture in Picture: the screen shows images, inserts, diagrams, keywords while the video with the professor stays in a smaller portion of the screen;
- Video Interviews on case studies, with other subjects in their workplace, in an office or in a professional environment where the subject is comfortable;
- screen capture, absence of location with only voice over (e.g. software Camtasia).
- animation videos to reinforce the idea of story-telling and to involve the students in scenarios they will be asked to reflect on

Each slide contains:

- text;
- support images;
- links to influential resources on the Internet, preferably open access, such as: books (complete text / book excerpts; reviews; abstracts etc.); articles (scientific reviews, detailed journalistic categories etc.); encyclopedia entries,



biographies (Britannica, Europeana, etc.); file audio (interviews, radio programmes); movies (e.g. from YouTube)

- any audio commentary made by the teacher.

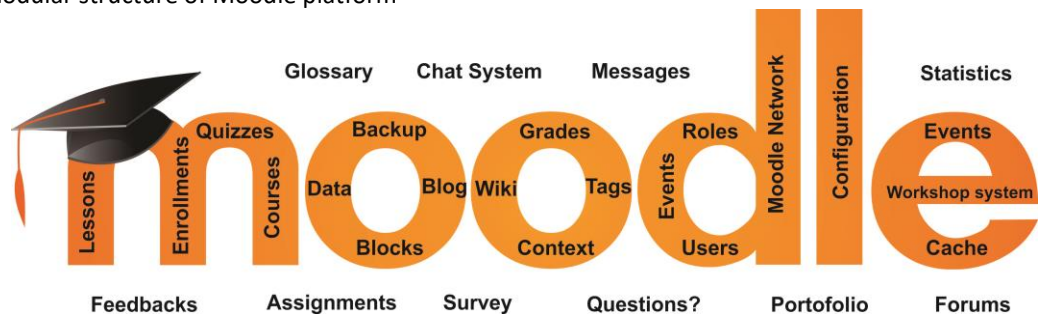
To allow students to self-evaluate their own study, **8/10 questions are associated with each lesson** according to the true / false or multiple-choice structure.

Federica’s seamless interface allows simultaneous visualisation of the video and slides.

3.2 The EnvyJobs Web Learning approach

Beginning in 2009, UPB made its first use of a Virtual Learning Environment (VLE), specifically the Moodle platform. Due to its modular design (shown in Figure 2), the platform has the advantage of adapting to almost all system platforms and supporting a wide range of useful functions and customization. The use of the Moodle platform is extensive and includes many useful features, including online courses; enrollment and class division; chat sessions with visible forum threads; file and lesson uploading; and online tests with due dates and feedback (Cocârță, D.M., Robescul LM and Negreal LA, 2019).

Fig.2: modular structure of Moodle platform



Figures 3 and 4 are evidencing what students and professors can do by using Moodle.

Fig.3: What Students can do with Moodle platform?

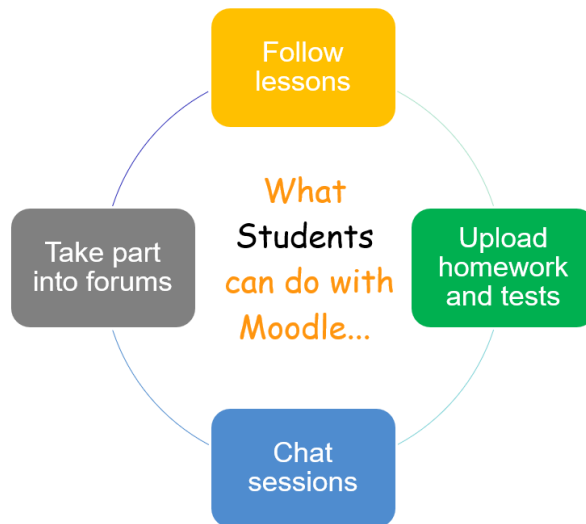
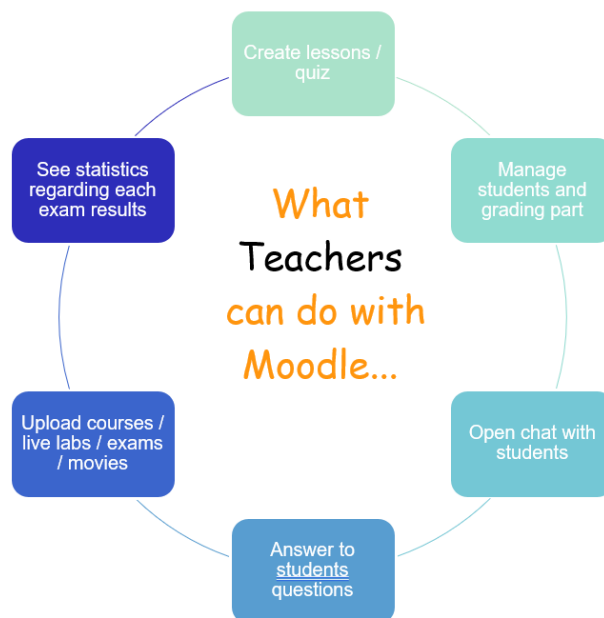


Fig.4: What Teachers can do with Moodle platform?



At University POLITEHNICA of Bucharest (UPB), the Moodle platform was chosen as Web Learning platform. EnvYJobs is an open-source teaching platform that was created using the Moodle e-learning platform and it was initially targeted at students from three different countries as part of an Erasmus+ project coordinated by POLITEHNICA of Bucharest. In the EnvYJobs project, four universities were involved (Technological Institute of Central Macedonia - Greece, University of Trento -Italy, Saxion University of Applied Sciences – The Netherlands and UPB, Romania), and six different courses were generated by



professors from the involved universities, covering different topics in field of environmental engineering. So, using an open-source web application, the EnvYJobs platform was integrated into a web server to build interactive learning environments for academic purposes.

The EnvYJobs platform was used to host three of the developed courses as part of the SafeEngine project (Environmental Risk Assessment, Occupational Health and Safety, and Workplace Social Inclusion), while the course entitled Safety in the Process Industry was hosted by Federica web Learning platform of the University of Naples Federico II, Italy. Independent of the course that the students choose to take, the EnvYJobs platform was used to conduct the final evaluations of the knowledge that students acquired while attending the online learning within the SafeEngine Erasmus+ project and using the project's e-Learning developed tools.

The standards set for the preparation of an online courses that were uploaded on the EnvYJobs platform were considered as for Federica and are briefly presented next. This choice was made to improve the quality of the educational tools generated within the SafeEngine project.

Each course is divided into lessons (5/10) -

Each lesson consists of two components:

- **Textual slides** (5-10 per lesson)
- **Video lectures** (1-3 per lesson).

To facilitate the use of the courses and their possible updating, **each lesson is divided into units (2-3).**

Each unit is composed of a video (6/8 minutes) and of textual contents organized in 10-12 slides

Videos can be made in different formats:

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- screen capture, absence of location with only voice over (e.g. software Camtasia).
- animation videos to reinforce the idea of story-telling and to involve the students in scenarios they will be asked to reflect on

Each slide contains:

- text;
- support images;
- links to influential resources on the Internet, preferably open access, such as: books (complete text / book excerpts; reviews; abstracts etc.); articles (scientific reviews, detailed journalistic categories etc.); encyclopedia entries, biographies (Britannica, Europeana, etc.); file audio (interviews, radio programmes); movies (e.g. from YouTube)
- any audio commentary made by the teacher.

To allow students to self-evaluate their own study, **8/10 questions are associated with each lesson** according to the true / false or multiple-choice structure.

Federica's seamless interface allows simultaneous visualisation of the video and slides.

3.3 Useful tips and key elements in learning design

Before you start, keep in mind two simple suggestions.

1. Collect all the materials you usually use to teach your course.
2. Establish a timeframe and goals.

Collecting all the materials used helps not only to reorganize them but also to understand what to keep and what to discard when the course is no longer directed to the limited audience in a closed classroom but to a classroom potentially open to the World Wide Web. Therefore, also considering the aspects of copyright protection of the materials we have created.

Next, a "course mapping" can be created by integrating activities and resources for each key concept to give meaning to the course content for students, and writing learning objectives for one or more module/unit.

At this point, the question should be asked whether our map is clear, whether the objectives are well stated and direct. Does it express what we can expect students to be able to do?

It is essential to build clear and measurable goals that outline what is expected of the student. These objectives will make it easier to align the rest of the course



(activities, assignments, materials/technology, and assessments) and will serve to communicate learning expectations to students.

In the course preparation some teaching techniques, collected from previous EU funded projects¹, can be of help in the reflection and in the preparation of the online lessons. Below are the most used ones:

- a. **Annotation** – get participants to annotate a resource and then summarise the key points
- b. **Articulate reasoning** - participants articulate their reasoning on a particular topic, this can be done as a reflective blog post or as part of a discussion forum thread.
- c. **Audio presentations** - combine a slide presentation with audio.
- d. **Brainstorming** - the tutor invites participants to brainstorm as many ideas as possible about a particular topic, these can be collated in an online tool such as linoit.com.
- e. **Collective aggregation** – get the participants to collectively aggregate a set of resources around a particular topic.
- f. **Flash debate** – where a current hot topic of relevance is put up as a discussion thread.
- g. **Crossword puzzle** - have a series of clues around a set of concepts and get participants to complete a crossword. So for example the clue ‘A type of pedagogical approach’ with 14 letters is ‘constructivism’.
- h. **Fish bowl** - where participants are organised in two circles, in the inner circle there are about four or five chairs, all the remaining participants are arranged in the outer circle. In an open fish bowl one chair in the inner circle is empty, in a closed fishbowl all are occupied. A moderator introduces a topic and those in the inner circle begin discussing it. In the open fish bowl anyone from the outer circle can then move to occupy the empty chair in the inner circle, when this happens someone must voluntarily leave. In the closed fish bowl those in the inner circle talk for a while and then choose to vacate their seat.
- i. **Flash cards** - participants work through a series of flashcards or can create and share their own flash cards. Can be useful for example in language learning in terms of drill and practice for learning vocabulary.
- j. **For and against debate** - where participants are divided into two teams of three, one team argues the case for a particular issue, the other team argues against it, then the wider cohort discuss and finally vote.

¹ EMMA European Multiple MOOC project funded by CIP – ICT Policy Support Programme (ICT PSP) of the European Union # 621030



- k. **Icebreakers** - activities which help participants relax and become used to a group context, they are useful at the beginning of a course. Here is a link to some useful examples (<http://www.educatorstechnology.com/2013/04/10-techy-icebreakers-for-21st-century.html>).
- l. **Interactive text** - Combine text with images and interactive resources, ensure that images are relevant for learning.
- m. **Jigsaw pedagogical pattern** - where a problem is broken down into four parts, each participant researches a part of the problem, then they get together with others who have researched the same problem, and then they return to their home team to combine knowledge.
- n. **Mini quizzes** – help participants assess their understanding of the week’s content and activities through a formative mini quiz, providing instant feedback.
- o. **Mindmapping** – get the participants to create a mindmap of a particular topic and associated ideas, either individually or in groups.
- p. **Peer critique** – get the participants to peer critique other participants’ writings.
- q. **Q&A forum** – a space for participants to ask questions, which can be answered by other participants and/or the tutors. Turn the final forum output into a FAQ list.
- r. **Reflective blog** – get the participants to keep a reflective blog, where they consider what they have learnt and the relevance to their practice.
- s. **Reciprocal teaching** - this entails the tutor and/or participants taking turns to lead a dialogue. There are four key activities: predicting, questioning, summarizing, and clarifying.
- t. **Pair dialogues** - participants work in pairs to develop a shared understanding of a particular set of concepts.
- u. **Panel discussion** - five or six participants form a panel and discuss a set of issues, this might include questions from the remainder of the cohort who form the audience for the debate.
- v. **Posters** - participants create a poster on a particular topic, peers provide comments and feedback.
- w. **Presentations** - participants give a presentation on a particular topic, either individually or in groups.
- x. **Rounds** - This is a simple technique that encourages participation. The tutor states a question and then goes around inviting everyone to answer briefly. This is not an open discussion. This is an opportunity to individually respond to specific questions, not to comment on each other's responses or make unrelated remarks.
- y. **Scavenger hunt** - participants are divided into teams, they are given a list of resources to find (for example they might be asked to find a resource on ‘constructivist learning’, or a resource describing how a wiki can be used to



- promote collaborative learning or a resource on the implications for learning). The team that collates all the items on the list first wins.
- z. **Synchronous seminars** - can be used to consolidate learning to date, provide participants with an opportunity to raise questions or reflect on their learning, or moderate a discussion topic.
 - aa. **Snowball** - enables participants to organise groups of ideas on a concept and assign them to themes. Patterns and relationships in the groups can also be observed. One slip of paper (or 'post-its') is used per idea generated or possible solution offered. A meeting is set up of up to 5 people. The slips of paper are viewed and then grouped 'like with like'. Duplicates can be created if the idea/solution is relevant to more than one group. Patterns and relationships in the groups are observed.
 - bb. **Structured debate** - the tutor poses an issue for participants to debate. Each participant then articulates their position. These are posted in the same document. Then to each position, each participant attaches pro or con arguments. They then critique the arguments by attaching (linking) various comments, two to four participants engage with each other on provocative or divisive issues with an eye to challenging themselves and the audience to examine their assumptions and unconscious beliefs.
 - cc. **Summarising** - students work either individually or in teams to summarise the key points associated with a particular text.
 - dd. **Teaching by asking** - begin the session by asking participants a set of questions related to the topic being covered.
 - ee. **Think – Pair – Share pedagogical pattern** - where participants think about a problem or question, then discuss it with another participant and then discuss collectively with the rest of the group.
 - ff. **Thought experiment** - participants are asked to imagine themselves in a particular situation and are asked questions about that situation.
 - gg. **Vicarious learning** – where one participant provides an explanation of a particular topic.

To sum-up there are 10 variables to keep under control when we are going to create an online course:

Fig.5: the 10 variables of teaching online



1. **Goals:** Start from the objectives. Clarify the expected learning outcomes. Clarify expectations.

2. **Vision:** Develop a vision, make clear the purpose of developing an online course. Imagine the future scenario.

3 **Small units:** Create modular and stand-alone units. Break the design into the smallest objects possible. Units of online learning should be short so as not to overwhelm the learner. The units should also be modular and able to stand alone.

4. **Scaffolding:** Progressively move students toward greater independence and understanding during the learning process

5. **Contents:** Think about engaging contents. Use text, images, videos. Video plays a key role in online learning and requires careful planning.

6. **Engage:** Find a way to engage with students



7: **Feedback:** Provide continuous feedback in different forms, eg inbuilt into the exercises, a short registered audio podcast from the teacher, etc.

8: **Real World:** Make real world connections

9 **Orient:** Orient students to the online course, describe what is expected of them in terms of commitment, equipment etc., and provide support.

10 **Be present:** establish a teaching presence. Post announcements, appear on videos, be active on the class forum



CONCLUSIONS

This is an era of remarkable potential for education, it's a great time to learn but also to teach, to experiment in teaching. Digital technologies offer us exciting opportunities for learning new things in new ways, but this requires flexibility, in the way we learn from each other.

Sometimes the changes that are affecting the world of education are explained in terms of technological development, and based on a smart use of the new technologies. Although technology may be the driver for innovation in education, it is the people that are the fuel that makes the innovation happen.

The "technology solutionism", which highlights on the one hand a growing power of the tech industry and, on the other, education as a market, where the large international tech companies (Microsoft, Google, Apple, etc) are playing a more important role, is a lens that alters reality. Learning is a human experience, our human mind can use technology to face problems surrounding teaching, but education itself remains a profoundly human endeavor. The most beautiful journey a human being can take happens through knowledge, and today, also thanks to modern technologies, teachers have the opportunity to make that journey even more exciting and real (not virtual). Just trying, experimenting, and getting involved in teaching online.



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